

29 June 1979

PROPOSED METHODOLOGY

BACKGROUND

1. Each of the CIA alternatives for bibliographic service will be examined in terms of its ability to provide timely and effective bibliographic support to specified components of the Intelligence Community. This proposed study methodology will be examined during the first three weeks of the study. The methodology will be reviewed, and revisions may be recommended by members of the study group.

2. Since CIA states in its proposal that the study should include an analysis of offsetting savings to be made by reducing on-going activities or planned new ventures for which substantial expenditures are planned, it is proposed that the basis for evaluating the CIA alternatives be an examination of potential benefits of the proposed CIA options in relation to the current or projected capabilities of bibliographic systems at other agencies. These examinations will consist of comparisons of the proposed CIA system to other agency systems using the following criteria:

- Completeness
- Currency
- Relevance
- Accessibility

- Timeliness
- Security.

DISCUSSION

Completeness

3. The working group will examine the completeness of the RECON system by comparing the holdings of that system to those of other community bibliographic systems. The relative completeness of RECON can be measured by examining the number of source materials indexed in various bibliographic systems. Table 1 depicts a potential recording of this measurement. It is anticipated that two different measures of this type will be required. One will record the total number of source documents indexed, the other will record that number in a base time period. The first measure will display the historical depth of coverage. The second measure will display the extent of coverage during a common time period. A potential problem with any bibliographic system is handling of agency-restricted data. An analysis of the amount of data originated (or generally distributed) by other agencies but not currently maintained by CIA in the RECON system would indicate the degree of the problem and provide a measure of completeness.

Currency

4. Crucial to the success of the proposed system is its ability to provide both a reference to the source document as well as to produce the source document itself within an acceptable period of time. This time period may vary with the purposes for which the proposed system is to be used in the various components. The group's examination will consist of an analysis of the average time required to index the source documents, perform data reduction, update the index, and store sources. This will provide

a measure of the capability of related systems to provide current references to source materials. It is anticipated that source materials will be stored in hard copy, micrographic, and digital form. This examination will compare the average time required to develop the index and provide the source documents regardless of the storage medium used. This measure assumes that all incoming source materials are simultaneously available to the information services departments of each component. It is a relative measure of the capability of the various systems to make the source material available in a minimal time period. Figure 1 shows the proposed presentation of this measurement.

Relevance

5. A crucial factor in the study of the CIA options is whether the search requirements of potential users can be satisfied by extended access to the RECON system. Each of the existing systems can be searched using a computer via any one or a combination of the elements used to describe each document. This includes title, originator, date, security classification and description, area codes, subject codes, and key words. The study group should examine the major categories of subjects and area codes to determine the relationship of codes used in existing systems to the proposed CIA system. This examination will reveal variations in the coding structures used to index source documents. The examination will be based on statistics that identify the frequencies with which selected codes are used in each index. It is assumed that much of this information is gathered during the data base maintenance process. Such a comparison will provide a measure of the proposed system to identify relevant source documents.

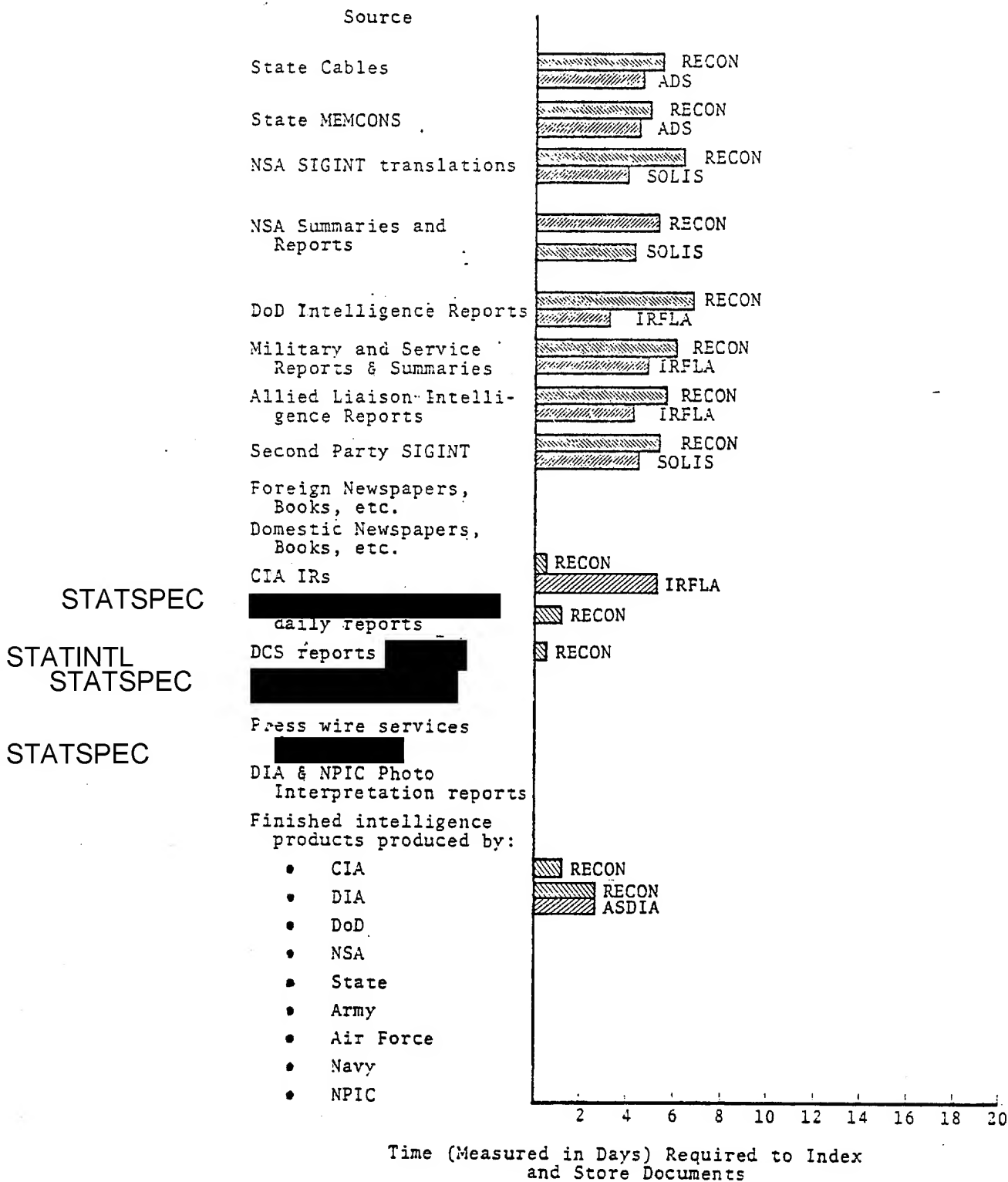


FIGURE 1

EXAMPLE OF PROPOSED MEASURE OF CURRENCY
OF EXISTING BIBLIOGRAPHIC SYSTEMS

Accessibility

6. An important factor in determining the feasibility of the alternatives is the identification of users and their projected method for accessing the system. It is assumed that the off-line service offered by CIA as option "a" for its bibliographic service would provide service to a large number of requestors via written requests for information. The two on-line options, "b" and "c", would provide access to the RECON directly (option "b"), or through an intermediary via a network linking OCR's analysts and community customers (option "c"). To examine CIA's cost assumptions, the study group will identify the number and location of potential users for each option. At a minimum, this would include the identification and location of the CIA's projected 50 simultaneous users under option "b".

Timeliness

7. The working group will also examine the timeliness of the proposed system by comparing the various options for supplying the source materials to the current capabilities of existing systems. This measure would be that of the relative time required to satisfy a request for information for all the alternatives proposed by CIA. It would measure the average time required to satisfy a request for information from initiation by the originator to receipt of the source document by that requestor. The timeliness measurement would examine the turnaround time for an average request. Such a measure will require a detailed examination of the request logs of the information service components. Figure 2 depicts a proposed method for displaying this measure.

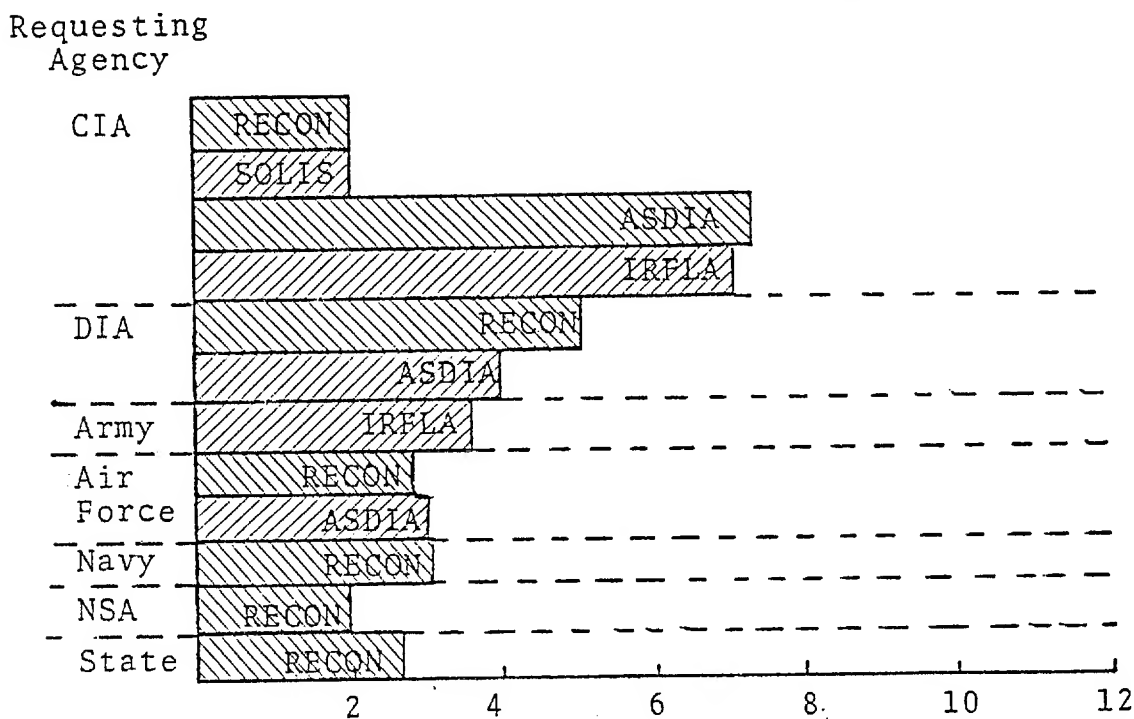


FIGURE 2

PROPOSED METHOD FOR DEPICTING TIME REQUIREMENT
FOR PROVIDING INFORMATION TO REQUESTORS

Security

8. One of the biggest impediments to the use of a centralized bibliographic reference system could be potential problems with security. The recent Analysts' Support Study highlighted the growing use of Agency-unique special access restrictions such as ORCON and NODIS. Another identified problem was the practice of classifying bibliographic references of a sensitive document at the same level as that of the source document. The Task Force felt that bibliographic references to a source document could be classified at a lower level. This would provide a reference to the document while limiting access to the document referenced in the bibliography. The CIA partially addressed this problem with options "3a" and "3c" by specifying the use of an intermediary who will query the RECON system and

forward appropriate replies to the requestor; however, option "2b", the full on-line use of the database, did not address these security problems. This examination will include analysis of agency-provided statistics on the number of restricted access documents in each of the existing bibliographic systems.

9. These six evaluation criteria are crucial to examine the potential benefits and costs of the alternatives offered by CIA. Using these criteria, the study team can systematically evaluate these alternatives to determine which alternative will potentially best satisfy user requirements. Once identified, the study team can focus on the system architecture (including communications), investment and operating costs, and recommendations for implementation.

Government Participation

10. Many of the facts required to evaluate the CIA alternatives under this proposed method can be gathered only by querying the existing bibliographic databases at the various agencies. Under the constrained time limits imposed for the study, the government members of the group must be able to provide such data. The contractor will provide specific analyses of government supplied data required to make assessments of the CIA proposal. The government members will provide assessments of the alternatives based on contractor supplied analyses. The contractor will then document the study group assessment.

Consultant Role for Contractor

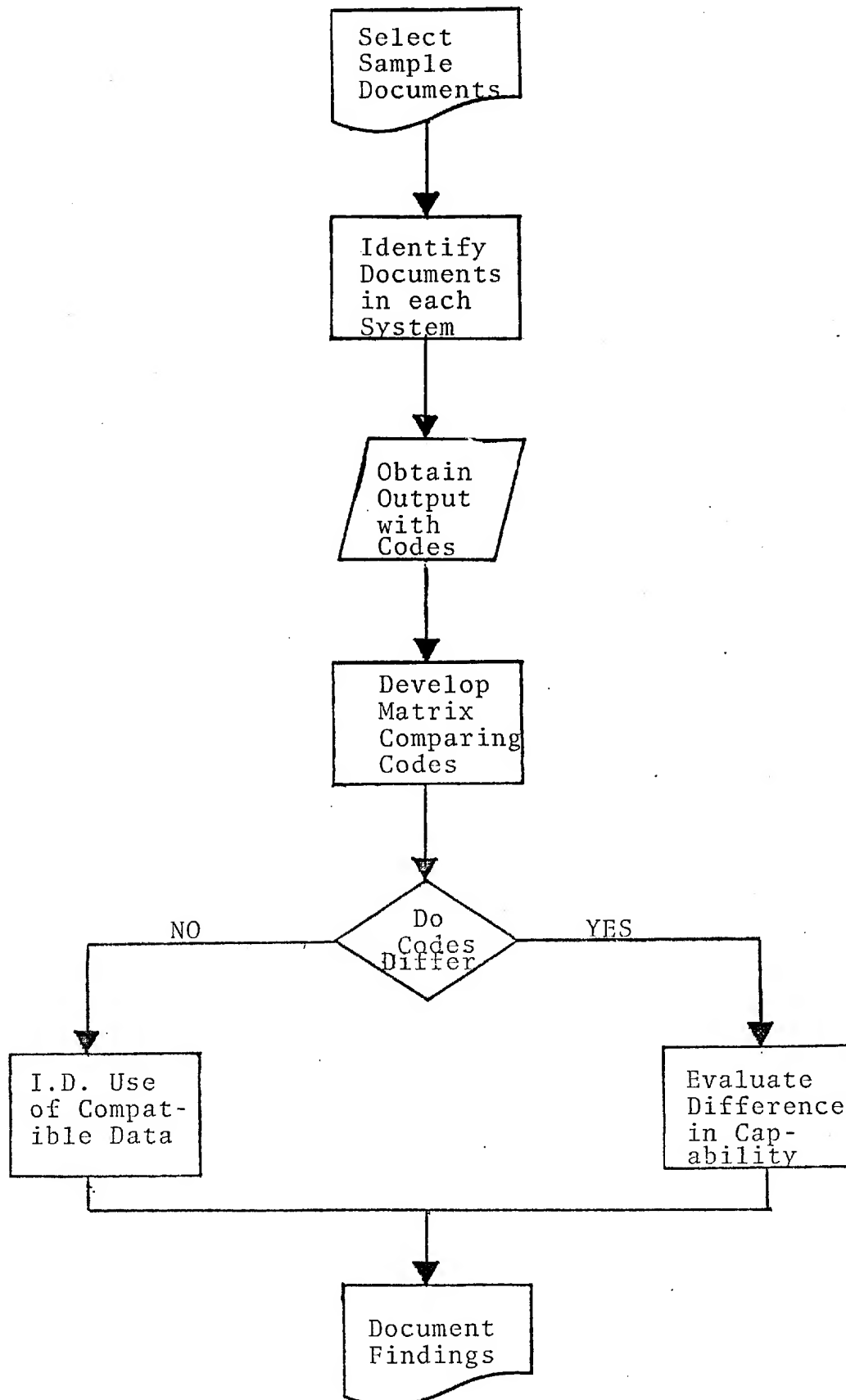
11. The contractor's role in this effort can be described as an objective third party that will provide analytical support as required and will document the study group's assessment and findings. The contractor will develop the initial methodology

PROPOSED APPROACH FOR STUDYING
THE RELEVANCE OF RECON

- Definition of RELEVANCE - The ability of a bibliographic system to provide information on subjects of interest to all potential users
- Evaluate the capability of a RECON-based centralized reference system to satisfy potential requests for information from potential users at various agencies
- Basis of evaluation is the examination of search strategies for the various bibliographic systems
- Assumptions for the approach:
 - 1 - that the following bibliographic systems can be compared:
 - CIA RECON
 - NPIC EPF
 - NSA SOLIS
 - NSA STRONGBOX
 - DIA ASDIA (all versions)
 - DIA IRFLA
 - DIA IRISA
 - STATE ADS
 - Air Force CIRC II
 - 2 - that the coded material placed in each bibliographic system is generally representative of the type of data that would be required by analysts at each agency.

- Assumptions for the approach (continued):
 - 3 - that this coded information in each system can be used as a basis of comparison
 - 4 - that the coding schemes of each system can be categorized for comparison
 - 5 - that the comparison of approximately 100 documents will provide a fair(though not statistically pure) evaluation of the capabilities of the proposed centralized system
- Method for selecting documents for comparison:
 - Documents chosen must appear in two or more systems so that comparisons can be made
 - No more than 100 total documents should be included in this sample comparison
 - To reduce the possibility of bias, the documents chosen should have already been placed in the bibliographic systems. (Recommend that cable materials be chosen from sources originated on or about 1200 noon/GMT/ZULU 17 January 1979. Finished documents and periodicals should have been published in January (or the 1st quarter) of 1979)
- Recommend that the following documents be used as a sample:
 - 15 SIGINT Headquarters Reports
 - 15 State Cables
 - 15 CIA finished intelligence products
 - 15 DIA finished intelligence products
 - 15 CIA intelligence reports
 - 15 DoD intelligence reports
 - 10 NPIC formal printed reports

OVERVIEW OF PROPOSED APPROACH FOR
EXAMINING THE CAPABILITY OF THE RECON
SYSTEM TO PROVIDE RELEVANT INFORMATION



Approved For Release 2002/01/08 : CIA-RDP83T00573R000100120016-4

SAMPLE METHOD FOR INDICATING THE INCLUSION OF DOCUMENTS
IN VARIOUS BIBLIOGRAPHIC SYSTEMS (U)

SOURCE	CIA	NPIC	NSA		DIA			STATE	AIR FORCE
	RECON	EPF	SOLIS	STRONGBOX	ASDIA	IRFLA	IRISA	ADS	CIRC II
NSA HEADQUARTERS REPORTS									
xxxxxxx 1	X		X	X					X
xxxxxxx 2	X		X	X					X
.									
.									
xxxxxxx 15	X		X	X					X
STATE CABLES									
xxxxxxx 1	X				X			X	X
xxxxxxx 2								X	
.								X	
.								X	
xxxxxxx 15	X				X			X	X
CIA FINISHED INTELLIGENCE PRODUCTS									
xxxxxxx 1	X				X				X
xxxxxxx 2	X				X				
.	X				X				
.	X								
xxxxxxx 15	X				X				

Approved For Release 2002/01/08 : CIA-RDP83T00573R000100120016-4

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Original to be Filled in				Dissemination Policy				FILE DESIGNATION			
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HANDLING INDICATOR				TO : Department of State				4437000479			
E.O. 12065: N/A				U--				I ①			
TAGS: BCRP, ERUN, FI				DATE: January 26, 1979							
FROM : Embassy HELSINKI				SUBJECT: CRP 0429 - Industrial Outlook Report > Minerals - Finland 1978							
REF : >MINING+INDUSTRY< >SIILINJÄRVI, >OUTOKUMPU,< >RAUTARUUKKI, >KOITELAISENKAIRA,< >KITTILÄY<											
Summary											
According to preliminary Finnish national income statistics, the value of mining and quarrying in 1978 amounted Fmk 581.6 million (\$ 239.4 million)* compared to Fmk 553.3 million (\$ 223.3 million)** in 1977. This is a nominal increase of 4.9 percent in Finnish marks and 7.2 percent in US dollars. In 1978 mining and quarrying accounted for 0.5 percent of the gross domestic product at factor cost, the same share as in 1977. (Final figures for total extraction and the output of individual mines and specific minerals are unavailable until April.)											
With known mineral deposits in Finland constantly decreasing, the mining companies concentrated on stimulating prospecting in order to secure a steady supply in the future. Some promising discoveries were made which will be subject to further investigation. Increasing emphasis has also been placed on export of mining technology and cooperation arrangements with other countries.											
* U.S. \$ 1.00 = Fmk 4.117, average selling rate for 1978											
** U.S. \$ 1.00 = Fmk 4.029, average selling rate for 1977											
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Opening and Closing of Mines

Work on developing the Siilinjärvi apatite mine has continued. Trial run of the mine and processing plant will start at the end of 1979. Annual production of the mine will be two million tons of ore with an apatite content of ten percent. Twenty percent consists of calcium and the rest is potash. The apatite will be used for the production of fertilizers and phosphorous acid and the calcium will be used within agriculture for reducing soil acidity. When the apatite production gets started it will reduce import of apatite, valued at Fmk 400 million annually, by ten percent. The total ore supply at Siilinjärvi is estimated at 500 million tons.

The Outokumpu mine in Vammala has begun commercial operation after years of trial excavating. The annual extraction of nickel and copper ore is 350,000 tons. Supply is expected to last for about ten years. The nickel content of the ore is 0.7 percent and the copper content 0.4 percent. The nickel production at Vammala covers one-fourth of the total nickel production in Finland.

A calcium mine at Siikainen has begun operation in the fall of 1978. Annual production is 180,000 tons. The dolomite calcium is of great importance for agriculture due to the magnesium deficiency of soil, particularly in western Finland.

No mine closings were reported during the year.

Ore Extraction and Output of Minerals

Total ore production at the Rautaruukki mines Ounaski, Rautavaara and Mustavaara in 1978 was 3.8 million tons. This was an increase of 600,000 tons or 15.3 percent over 1977. Iron concentrate amounted to 785,000 tons. Ilmenite production was 132,000 tons and vanadium pentoxide 5,000 tons.

Ore extraction by Outokumpu decreased seven percent in 1978. The total was 5.4 million tons, compared with 5.8 million tons in 1977. According to preliminary information the Cu content of copper concentrates was 46,870 tons of which 3,470 tons came from the Luikonlahti mine not included in the total ore extraction of Outokumpu. The Ni content of the nickel concentrates was 4,380 tons of which 290 tons was received from the Lahnaslahti mine. The Zn content of the zinc concentrates was 53,200 tons of which 1,900 tons was received from Luikonlahti.

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 MANAGE: E
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 MINING INDUSTRY: SIILINJARVI, OUTOKUMPU, RAUTARUUKKI,
 KOITELAISENKAIRA, KIITILA (E)
 KEYWORD: MINERALS, MINING INDUSTRY, SIILINJARVI, OUTOKUMPU,
 RAUTARUUKKI, KOITELAISENKAIRA, KIITILA
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13 SC ECRP
14 EMIN
15 FI
16 MINERALS
17 CERP 0429
18 INDUSTRY
19 IA 111

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SAMPLE COMPARISON OF DATA ELEMENTS IN BIBLIOGRAPHIC SYSTEMS (U)

	CIA	NPIC	NSA		DIA			STATE	AIR	E
	RECON	EPF	SOLIS	STRONGBOX	ASDIA	IRFLA	IRISA	ADS	CIRC	II
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FULL TEXT DATA										

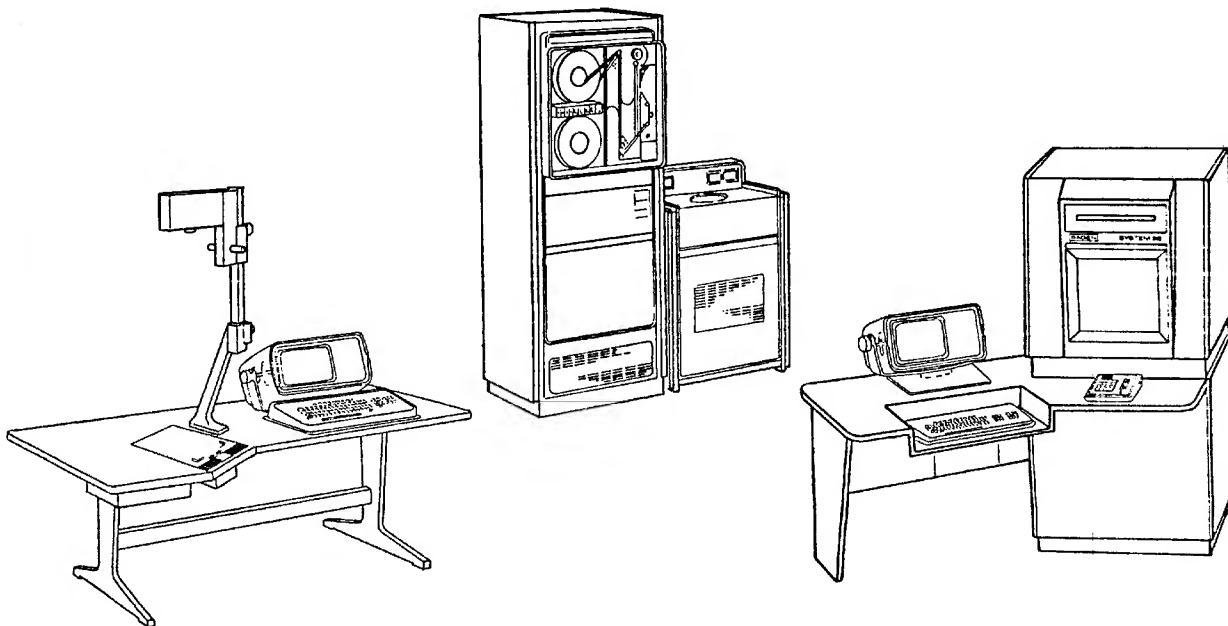
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SAMPLE COMPARISON OF BIBLIOGRAPHIC DATA CODED
ON THE SAME SOURCE INTO DIFFERENT SYSTEMS (U)

CATEGORY	CIA	NPIC	NSA		DIA			STATE	AIR FORCE
	RECON	EPF	SOLIS	STRONGBOX	ASDIA	IRFLA	IRISA	ADS	CV II
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FREE FORM DATA (title, abstract)	TITLE: CERP 0429 - INDUSTRIAL OUTLOOK REPORT MINERALS - FINLAND 1978 (Mining Industry; SILINJARVI, OUTOKUMPU, RAUTARUUKKI, KOITELAISENKAIRA, KITILA) (E)							TITLE: CERP 0429- INDUSTRIAL OUTLOOK REPORT-MINERALS-FINLAND 1978	
ALL TEXT DATA									

SYSTEM 95**Information Management System****GENERAL DESCRIPTION**

The RAGEN Information Management System is a powerful information processor which integrates random data entry with on-line processing and an electronic interrogation capability. This results in a fully automated retrieval, display, and/or choice of hard copy of any one of over a million pages of written, printed, pictorial, disc resident or COM data...all in a matter of seconds.



The RAGEN Information Management System consists of three expandable modular units:

- **DATA CAPTURE STATION**
- **DATA MANAGEMENT CENTER**
- **DATA ACCESS TERMINAL**

RAGEN

INFORMATION SYSTEMS
500 BELLEVILLE TPK., N. ARLINGTON, N.J. 07032 (201) 997-1000

SYSTEM PHILOSOPHY

The RAGEN Information Management System is based upon a philosophy that true information management involves more than the ability to store and retrieve huge volumes of data.

A comprehensive system should accommodate all types of data input, including COM, with equal ease and a minimum of clerical effort. Random entry of data should be facilitated without the need for batching, sorting, editing, or splicing. Use of the system should be easy to learn, and operator errors should be minimized through computer prompting, verification, and control. Source documents should be handled only once for simultaneous graphic and digital data entry, with operator key stroking kept to only the standard minimum for processing.

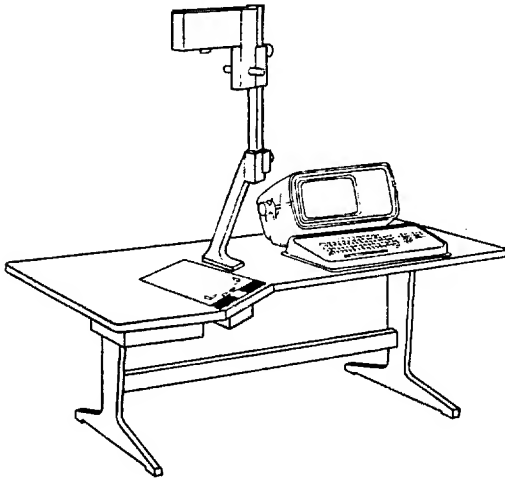
System programming must include automatic routines for large volume random inputs, for cross reference association with the existing data base, and for automatic system address assignments to facilitate information retrieval. There must be enough computing capacity to run the system *and* do other standard data processing activities.

Information retrieval must be fully automatic in order to recover processed information quickly from the entire data base. No manual handling of cartridges should be needed during retrieval. The entire data base must always be intact and secure, and therefore totally available for interrogation and retrieval, with automatic association of multiple page records, and with no out-of-file conditions. Hard copies of information must be available upon demand.

Finally, the system should provide user and data base statistics for maximum efficiency. Data security must also be available so that confidential information is inaccessible to unauthorized personnel, and conversion of an existing data base should require as little manual effort as possible.

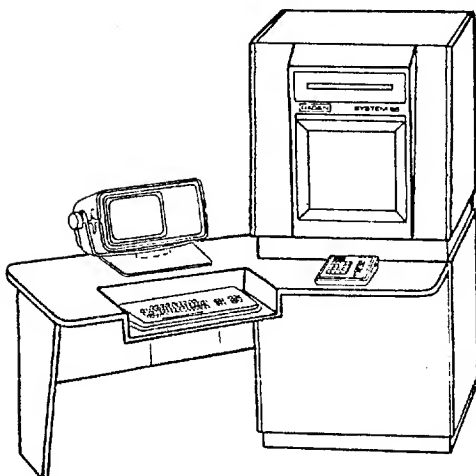
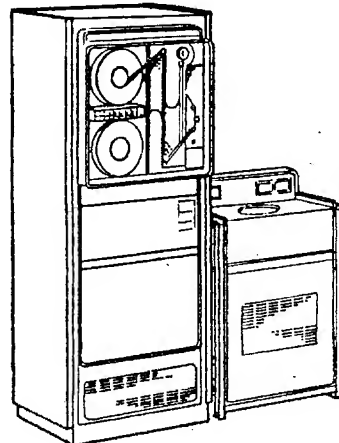
SYSTEM OVERVIEW

RAGEN'S Information Management System satisfies the demands of a total information management system by turning random input into organized information, ready for completely automated retrieval whenever needed.



One-step random input is accomplished at the **Data Capture Station**, where digital and graphic data, from source documents are captured immediately when they first enter an organization. Assisted by computer prompting, information is keystroked only once and is available for both data processing and retrieval.

The **Data Management Center** automatically controls all input routines, assigns a system address to each input, including COM inputs, cross-references the entries, and processes data into organized information for ready access.



The Fully automated **Data Access Terminal** responds to every inquiry with organized information from both the digital and graphic data bases. The entire data base is available for access since all pages of information are always in file, and secure. Up to 1,200,000 pages of information per terminal can be accessed, each page in an average of less than ten (10) seconds. And a hard copy can be made of any one page or series of pages.

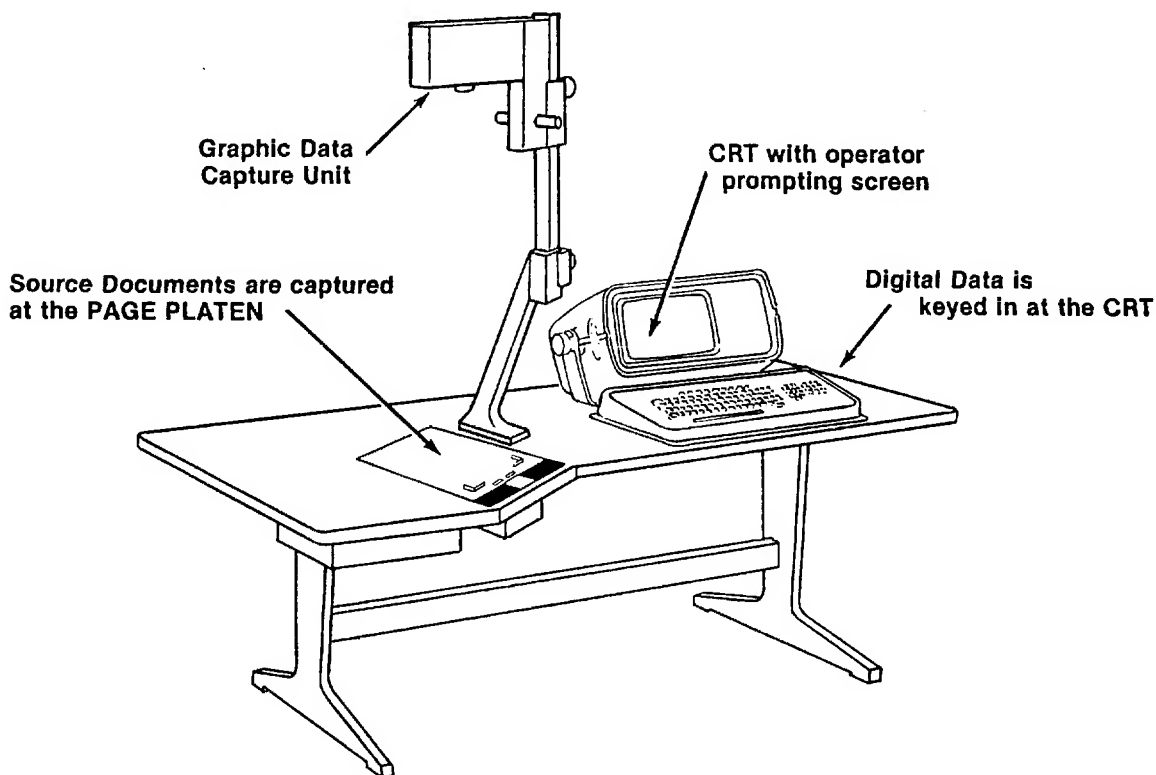
The RAGEN Information Management System is adaptable to existing data routines, and new routines can be organized for specific applications and information requirements.

RAGEN

INFORMATION SYSTEMS

DATA CAPTURE STATION

The **Data Capture Station** provides an in-house capability to enter, maintain and rapidly update data for the RAGEN Information Management System.



DATA ENTRY PROCEDURE: At the Data Capture Station, the operator views a page of written, printed, pictorial, or other source documents on the Page Platen. The operator keys into the CRT any number of descriptors of the page (names, amounts, dates, etc.) necessary for computer processing.

A system address is then automatically assigned to the entry on the CRT, and is also automatically displayed on the Page Platen. The Graphic Data Capture Unit films the source document automatically along with the numeric display of the system address, and the operator goes on to the next entry.

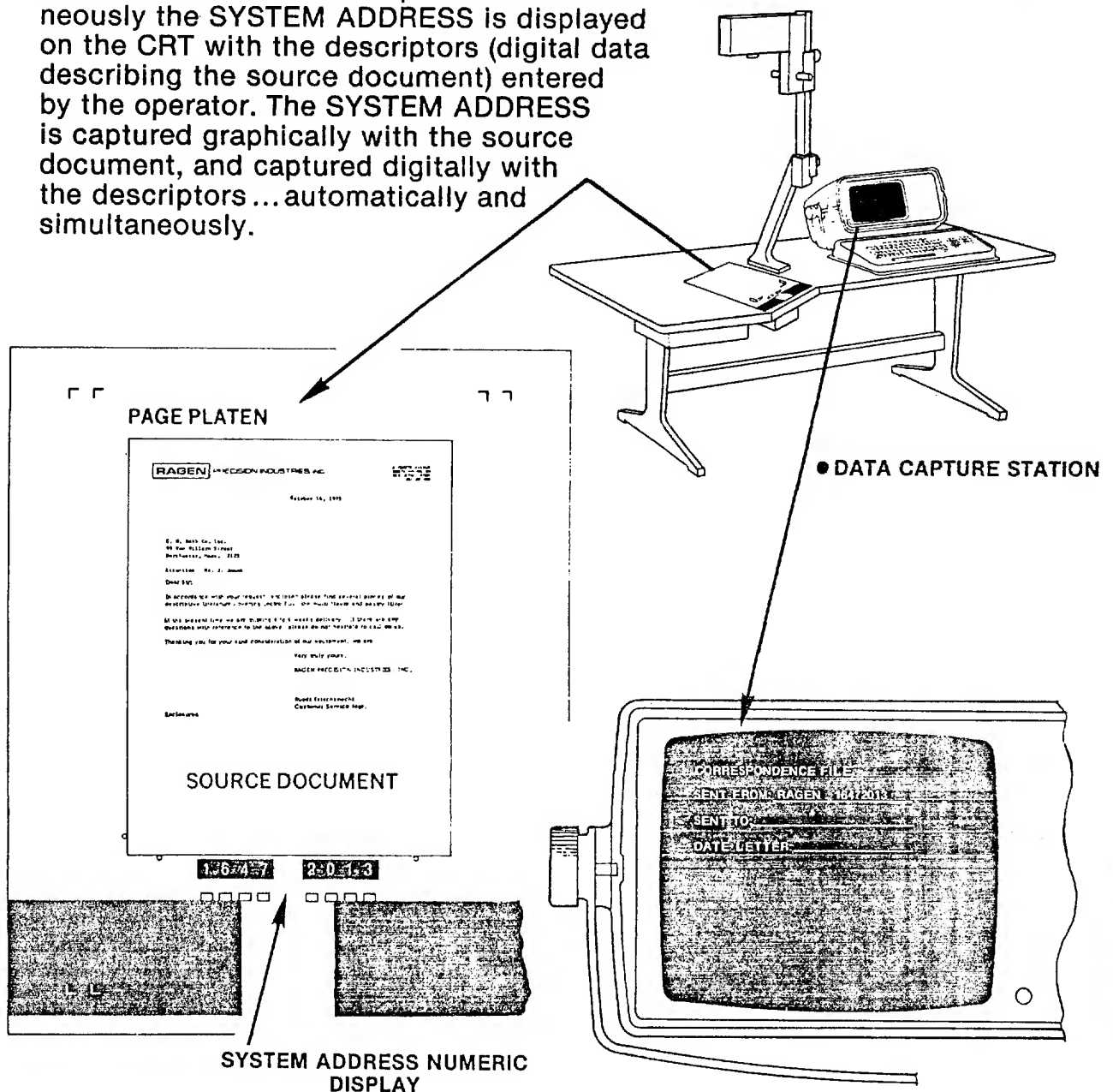
Note that documents are handled only once, and that standard data is keyed in only once for computer processing.

MAINTAINING AND UPDATING PROCEDURE: Data can be randomly updated, and new data can be randomly added to the data base by following the data entry routine. The Data Management Center automatically links old and new, or updated data, for status reporting and retrieval.

THE RAGEN SYSTEM ADDRESS and DATA ACQUISITION

The SYSTEM ADDRESS is a unique eight digit number automatically assigned at the Data Capture Station. The first four digits represent the PAGE ADDRESS...there are 4,000 pages in each RAGEN cartridge. The second four digits represent the CARTRIDGE ADDRESS...there are 300 RAGEN cartridges in each terminal. The SYSTEM ADDRESS is also the system instruction permitting automatic retrieval and display of any PAGE.

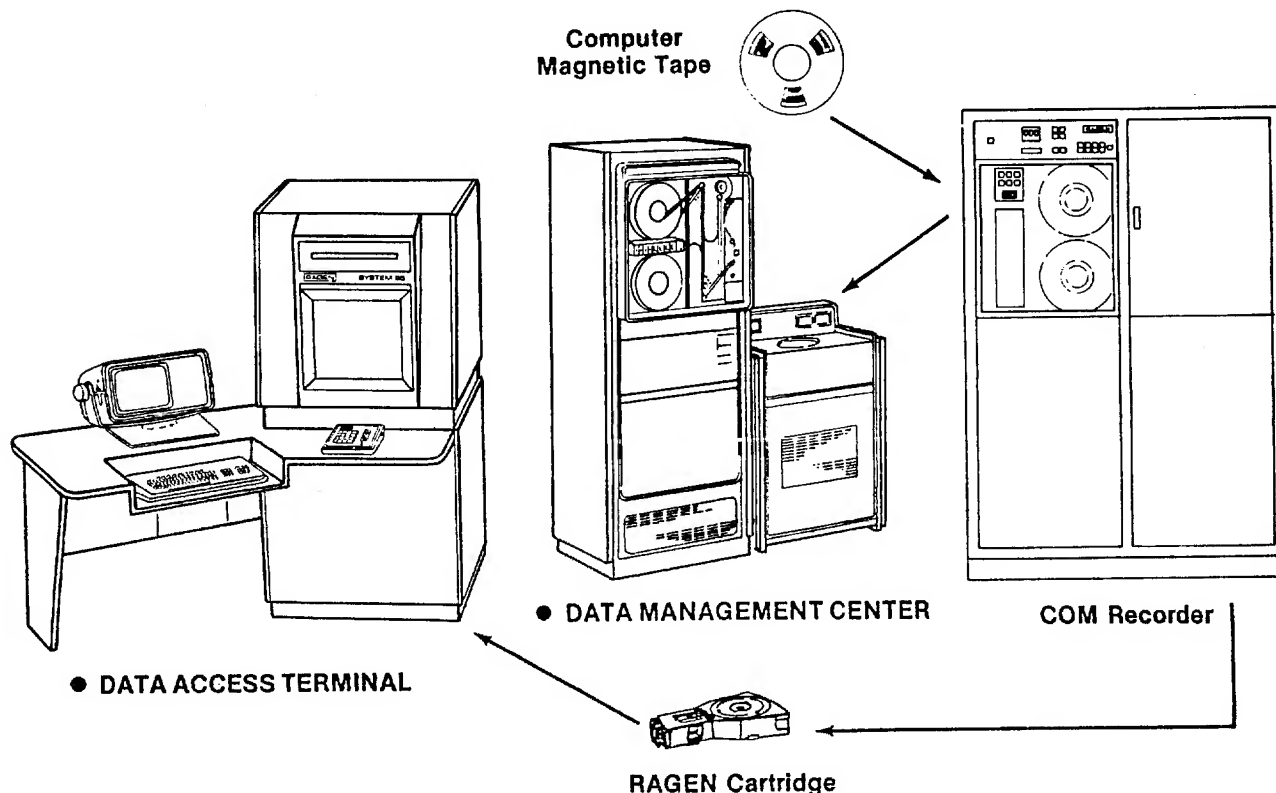
The SYSTEM ADDRESS appears as a numeric display on the PAGE Platen directly below the source document to be captured. Simultaneously the SYSTEM ADDRESS is displayed on the CRT with the descriptors (digital data describing the source document) entered by the operator. The SYSTEM ADDRESS is captured graphically with the source document, and captured digitally with the descriptors...automatically and simultaneously.



RAGEN

DATA ENTRY USING COM

Computer Output Microfilm (COM) can be entered directly into the RAGEN Information Management System and mixed with graphic source documents, providing a massive information resource at a very low cost.



For the first time Computer Output Microfilm (COM) can be an automatic, readily accessible information data base when utilized in the RAGEN SYSTEM 95 INFORMATION MANAGEMENT SYSTEM. Use can be made of all the benefits of COM, including reductions in computer usage, memory storage, costly paper printout, supplies, and off-line printing time. The SYSTEM 95 provides powerful electronic interrogation and automatic access capability to 1 million pages of COM data. The computer generated magnetic tape that produced the COM is stripped directly into the Data Management Center automatically producing the index for interrogating the COM graphic data base.

There is no manual acquisition of graphic or digital data required for the utilization of COM with the RAGEN SYSTEM 95. All the data involved has already been acquired for other purposes.

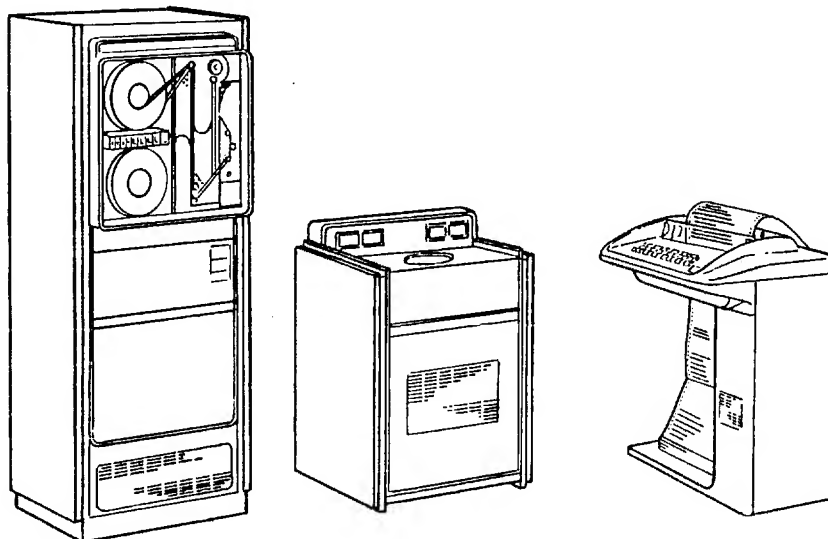
The result — ten seconds access to any page of COM or other information pages, in accordance with any means of inquiry desired.

RAGEN

INFORMATION SYSTEMS

DATA MANAGEMENT CENTER

The Data Management Center controls the entry and inquiry functions of the system, as well as handling the internal file organization and digital storage for each application.



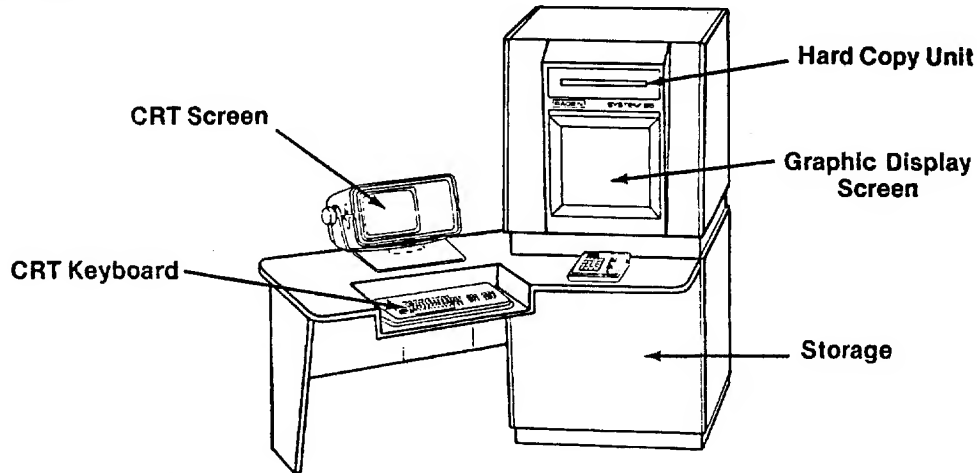
The software is computer hardware independent and thereby the System 95 may be run in a stand alone configuration, or as a peripheral to the user's existing computer system. When provided as a turn key system, RAGEN selects the appropriate hardware to suit the user's application and volume requirements. In many instances additional computer functions will be added to provide the user with a complete data processing system. A typical Data General configuration might be:

MODEL	DESCRIPTION
8390H	Nova® 3/12 CPU with 64 K words core.
6060	96 MB magnetic disc subsystem.
6042	Dasher™/printer 30 CPS.
6021	Magnetic tape subsystems.
6053	CRT console.

The Data Management Center provides input/output interface for the Data Capture Station, Data Access Terminal, printer, magnetic disc, tape and CRT. User functions are provided to add, retrieve, change, and delete documents under programmed format control and assistance. File index linkage, system address control and sophisticated boolean logic for document identification are incorporated to facilitate data management. Integral parts of the SYSTEM 95 include the utility programs and report generator, which provide meaningful statistics and reports for total management control.

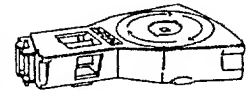
DATA ACCESS TERMINAL

At the Data Access Terminal, the operator initiates an electronic inquiry through the CRT keyboard and instantly receives information relative to the inquiry, based upon an electronic search of the entire data base. The TERMINAL contains all stored graphic data, and upon command in reference to the inquiry, automatically retrieves, displays, and offers for hard copy and page in over a million pages of written, printed, pictorial, or COM data.



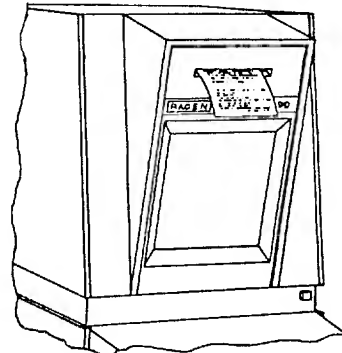
DATA ACCESS PROCEDURE: To initiate an interrogation, the operator enters an inquiry (name, number, subject, code, etc.) via the CRT keyboard and receives an immediate status report on the CRT screen as to the contents of the entire file. The inquiry can be broadened or narrowed, as desired, until satisfied. Where appropriate, the status report is a menu of the pages in file which satisfy the inquiry parameter(s), from which the operator may select any page for display.

DATA ACCESS TERMINAL ACTIONS: The Terminal automatically retrieves the required Ragen Cartridge and displays the required page thereby satisfying the inquiry. Retrieval and display of a page averages less than ten (10) seconds.



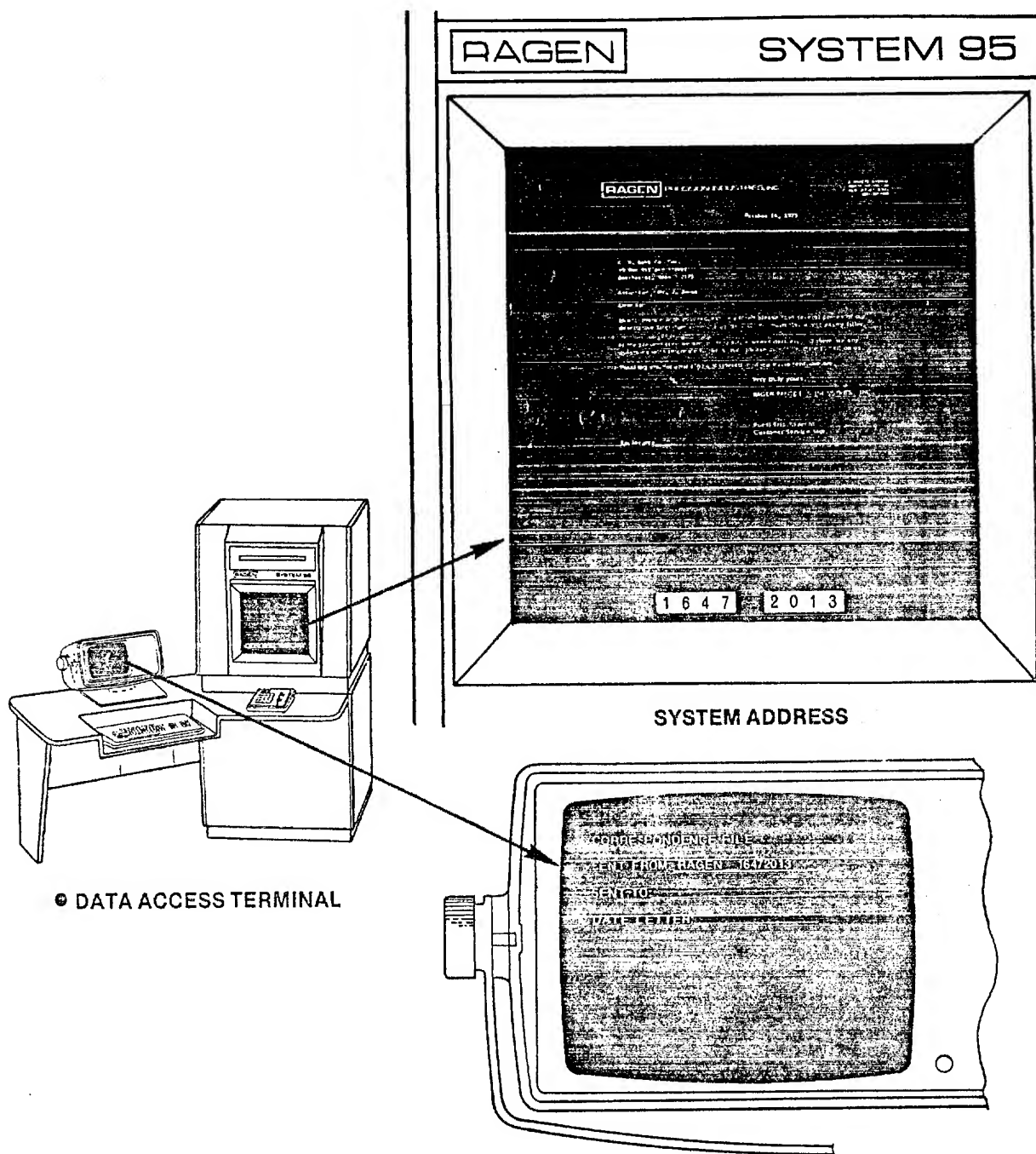
Multiple pages in a file list can be brought up for viewing in either their list sequence or in any order called for, although in actuality, the pages may be randomly dispersed throughout the file.

A dry hard copy of the displayed page can be made at any time during an automated-retrieve-display routine by key activation. Retrieve routines may continue following a three second exposure time sequence.



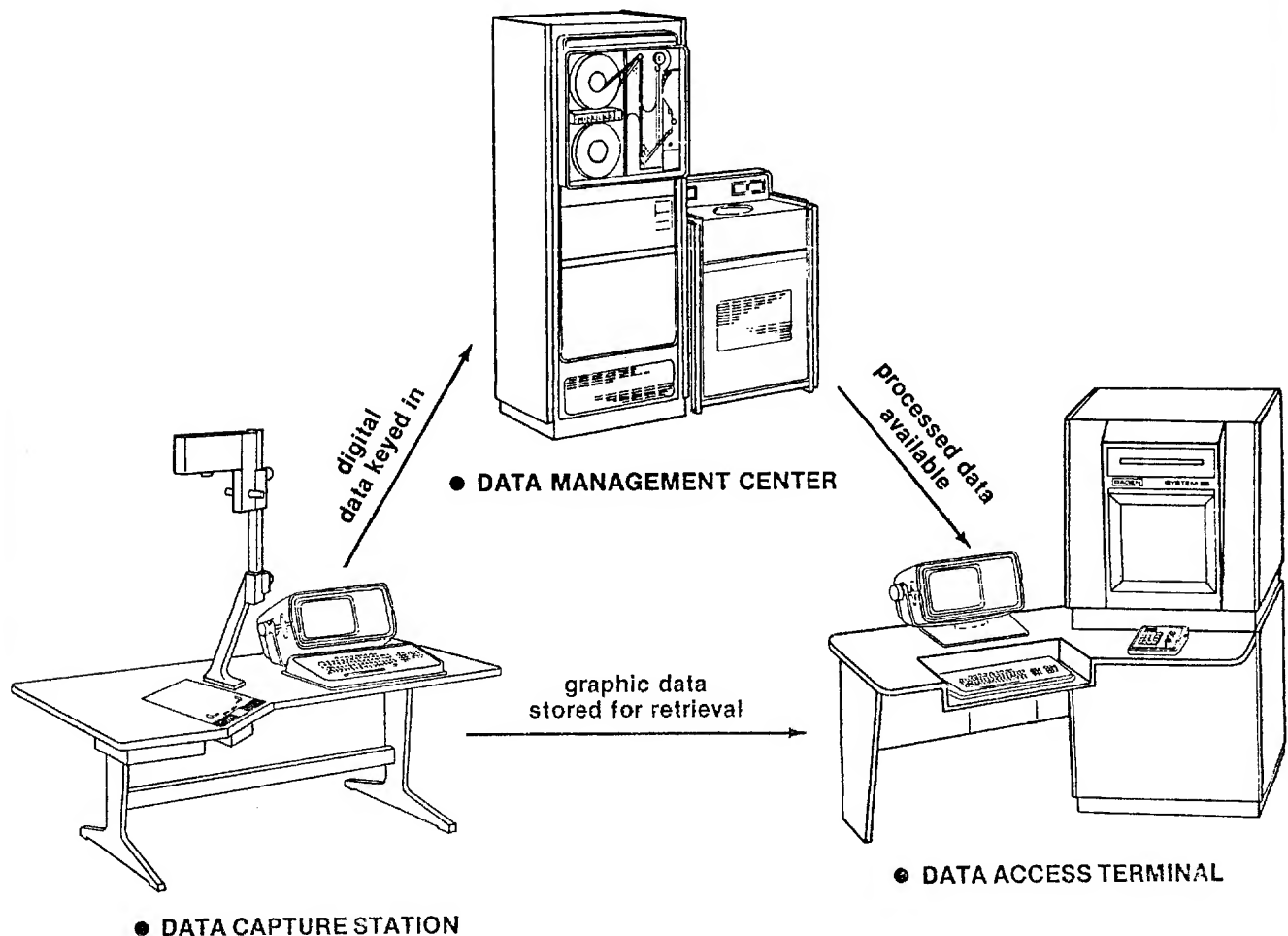
THE RAGEN SYSTEM ADDRESS and RETRIEVAL

interrogation of the System 95 through the CRT yields a complete information display: the CRT shows a menu of pages available with their SYSTEMS ADDRESSES, and on request, the Graphic Display Screen shows one of the required pages with its SYSTEM ADDRESS at the bottom. The SYSTEM ADDRESS is the machine instruction for the Terminal, and is transmitted automatically on command without further operator action. The graphic image of the SYSTEM ADDRESS provides visual verification that the requested page has been displayed.



SYSTEM SUMMARY

The RAGEN System 95 is unique in having all the features necessary to qualify as a total information management system: random one-time data and document entry; on line data processing to instantly integrate and cross file all entries including COM; a huge organized file having a sophisticated electronic interrogation capability; automatic direct-access retrieval of requested digital and graphic information in response to an inquiry; hard copy of any page on demand.



The simplicity of RAGEN's Information Management System makes it cost effective because it is easily adaptable to most information management requirements and applications. Applications have been made in both the business and the governmental sectors of the economy, and have proved themselves to be powerful tools in reducing office costs while boosting productivity.

SPECIFICATIONS

DATA CAPTURE STATIONS

RAGEN Data Capture Station: comes with an RS-232-C compatible control system, and a high resolution planetary camera, adjustable reduction. Power: $115 \pm 10\%$ volts 0.5 - 1.5 AMPS.

width 60 inches
depth 32 inches
height 67 inches

Multiple Data Capture Stations can be used simultaneously and remotely. COM is entered directly into the system, bypassing the Data Capture Station. Cost effective conversions of existing data bases and microforms arranged upon request.

DATA MANAGEMENT CENTER

Central Processing Unit, recommended minimum capacity: 64K Word MOS memory with parity, with full operating system, and high level language support.

Disc Storage Subsystem, recommended minimum capacity: 96-megabyte disc drive, expandable controller and adapter.

Magnetic Tape Subsystem, recommended minimum capacity: 1600-bpi P.E. operation, 75-ips tape speed, auto-entry on data transfer, auto-skip erase on auto-rewrite, supported as a file I/O device.

CRT Display, recommended minimum features: detached keyboard with teletypewriter keyboard layout, separate 11-key numeric data entry pad, 8 user-programmable function keys—Display with 64 character, upper case alphanumeric display, 1920 characters (24 lines of 80 characters each) RS-232-C or current loop.

DATA ACCESS TERMINALS

RAGEN Data Access Terminal: Storage capacity is 1,200,000 images. RS-232-C compatible as an I/O device. Printer option for hard copy. Power $115 \pm 10\%$ volts 6.5 - 15.0 AMPS.

width 73 inches
depth 39 inches
height 64 inches

Multiple terminals can be used simultaneously and remotely. Up to 15 terminals can be multiplexed via hard wire or voice grade unprocessed telephone lines.

RAGEN

THE RAGEN SYSTEM 95 INFORMATION MANAGEMENT SYSTEM is the Total Information Processor conceptually designed and built by Ragen Precision Industries.

The SYSTEM 95 design is a logical extension to the in-house technological capabilities and expertise of Ragen for producing various types of automated systems for manufacturing processes, commercial and military electro-mechanical systems and components, high technology semiconductor packages and consumer electronic products.

The components and sub-assemblies comprising the RAGEN SYSTEM 95 INFORMATION MANAGEMENT SYSTEM are manufactured to the highest standards of reliability and workmanship.

RAGEN

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Approved For Release 2002/01/08 : CIA-RDP83T00573R000100120016-4

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